

CLAIMS

1. A method for automatic data acquisition of forms whose design and informational content is not known in advance, said method comprising the steps of:

providing an unknown form;

generating a form map based on designs on said unknown form for identifying information contained on said unknown form;

searching and comparing said generated form map with stored, registered maps in a means for storing form maps;

storing said generated form map in said means for storing form maps when said generated form map does not coincide with a stored map according to predetermined limits for agreement;

indicating agreement according to the limits for agreement when agreement is found; and

continuing data acquisition from said unknown form for identifying informational content on said unknown form.

2. The method according to claim 1, wherein:

said generated form map includes an object area list with objects contained in said unknown form.

3. The method according to claim 2, wherein:

said objects comprise colors and text.

4. The method according to claim 1, wherein:

said generated form map includes a line map comprising line elements from said unknown form.

5. The method according to claim 4, wherein:

horizontal line elements in said line map are used to generate a horizontal key by dividing said unknown form into a predetermined number of horizontal segments along a y-axis in a cartographic system of coordinates, wherein each segment is equivalent to one horizontal key position; and

vertical line elements in said line map are used to generate a vertical key by dividing said unknown form into a predetermined number of vertical segments along an x-axis in said cartographic system of coordinates, wherein each segment is equivalent to one vertical key position.

8. The method according to claim 5, wherein:

said horizontal key and/or said vertical key constitute a line key in the line map, wherein during said searching and comparing step, the key position generated is compared with key positions stored in the means for storing form maps for verifying agreement.

9. The method according to claim 8, wherein:

said key positions are sorted in the storage means according to the number of markings.

10. The method according to claim 2, wherein:

an object's horizontal position in the object area list is used to generate a horizontal key by dividing the unknown form into a predetermined number of horizontal segments along a y-axis in a cartographic system of coordinates, wherein each segment is equivalent to one horizontal key position; and

an object's vertical position in the object area list is used to generate a vertical key by dividing the unknown form into a predetermined number of vertical segments along an x-axis

in said cartographic system of coordinates, wherein each segment is equivalent to one vertical key position.

13. The method according to claim 10, wherein:

a horizontal key position and/or a vertical key position constitute an object key in the object area list, wherein during said searching and comparing step, the object key generated is compared with object keys stored in the means for storing form maps for verifying agreement.

14. The method according to claim 13, wherein:

the object keys are sorted in the storage means according to a number of markings.

15. The method according to claim 1, wherein:

the searching and comparing step results in a pre-defined number of requested probable candidates for the unknown form; and

manually identifying said unknown form if several alternative candidates are found as probabilities according to a factor of merit.

18. An apparatus for automatic data acquisition comprising:

means for scanning an unknown form;

means for generating a form map based on said unknown form for identifying information contained on said unknown form;

means for storing known form maps;

means for searching and comparing said unknown form map with stored, recognized form maps in said means for storing known form maps;

means for storing generated form maps in the means for storing known form maps when form maps based on unknown forms do not coincide with stored form maps according to predetermined limits for agreement;

means for indicating agreement according to said limits for agreement when agreement is found; and

means for identification and continued data acquisition of information contained on said unknown form.

19. The apparatus according to claim 18 wherein:

said generated form map includes an object area list with objects contained in said unknown form.

20. The apparatus according to claim 14, wherein:

said objects comprise color and text.

21. The apparatus according to claim 18, wherein:

said generated form map includes a line map comprising line elements from said unknown form.

22. The apparatus according to claim 21, wherein:

horizontal lines in said line map are used to generate a horizontal key by dividing said unknown form into a predetermined number of horizontal segments along a y-axis in a cartographic system of coordinates, wherein each segment is equivalent to one horizontal key position; and

vertical lines in said line map are used to generate a vertical key by dividing said unknown form into a predetermined number of vertical segments along an x-axis in said

cartographic system of coordinates, wherein each segment is equivalent to one vertical key position.

25. The apparatus according to claim 22, wherein:

a horizontal key and a vertical key constitute a line key in said line map, and during searching, the line key generated is compared with line keys stored in said storage means.

26. The apparatus according to claim 25, wherein:

line keys are sorted in the storage means according to number of markings.

27. The apparatus according to claim 18, wherein:

an object's horizontal position in the unknown form in an object area list is used to generate a horizontal key by dividing the unknown form into a predetermined number of horizontal segments along a y-axis in a cartographic system of coordinates, wherein each segment is equivalent to one horizontal key position; and

an object's vertical position in the object area list is used to generate a vertical key by dividing the form into a predetermined number of vertical segments along an x-axis in said cartographic system of coordinates, wherein each segment is equivalent to one vertical key position.

30. The apparatus according to claim 27, wherein:

a horizontal key position and/or a vertical key position constitute an object key in the object area list, wherein during searching, the object key generated is compared with object keys stored in the storage means.

31. The apparatus according to claim 30, wherein:

object keys are sorted in the storage means according to number of markings.

32. The apparatus according to claim 18, wherein:

searching in said searching and comparing means results in a pre-defined number of requested probable candidates for said unknown form; and including

means for manual identification of the unknown form when several alternative candidates are found as probabilities according to a factor of merit.